



July 27, 2020

10 CFR 50.73

Docket No. 50-443
SBK-L-20101

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Seabrook Station
Licensee Event Report (LER) 2020-001-00
Manual Reactor Trips due to Control Rod Bank Unexpectedly Inserting

Enclosed is Licensee Event Report (LER) 2020-001-00. This LER reports two similar events that occurred at Seabrook Station on May 29, 2020 and subsequently on June 06, 2020. These events are being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A).

Should you require further information regarding this matter, please contact me at (603) 773-7932.

Sincerely,

NextEra Energy Seabrook, LLC

A handwritten signature in black ink, appearing to be "KB", written over a horizontal line.

Kenneth Browne
Safety Assurance and Learning Site Director

cc: D. Lew, NRC Region I Administrator
J. Poole, NRC Project Manager
P. Cataldo, NRC Senior Resident Inspector

Enclosure to SBK-L-20101



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollect.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: aira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name Seabrook Station	2. Docket Number 05000 443	3. Page 1 OF 3
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4. Title Manual Reactor Trips due to Control Rod Bank Unexpectedly Inserting
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5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
05	29	2020	2020	- 001	- 00	07	27	2020	Facility Name	Docket Number 05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. Power Level	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
100	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)		

12. Licensee Contact for this LER	
Licensee Contact Ken Browne, Safety Assurance and Learning Site Director	Telephone Number (Include Area Code) 603-773-7932

13. Complete One Line for each Component Failure Described in this Report									
Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
B	AA	CBD	WEST	Yes					
14. Supplemental Report Expected					15. Expected Submission Date				
<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No					Month: Day: Year:				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On May 29, 2020 at 1404 Eastern Standard Time (EST), Operations initiated a manual reactor trip due to more than one control rod fully inserting into the core. All systems responded normally post-trip. Operations stabilized the plant in Mode 3. Decay heat removal was accomplished via the steam dumps in the steam pressure mode to the main condenser. Emergency feedwater actuated due to low-low steam generator level as expected. An investigation was performed, determining that the cause of the event was due to a loose or improperly seated stationary gripper regulation circuit card within one of the rod control system power cabinets. The suspect gripper card was replaced and functionally tested. Plant restart and power operation resumed.

Subsequently, on June 06, 2020 at 0921, Operations initiated a manual reactor trip due to more than one control rod fully inserting into the core. Corrective actions resulted in replacing multiple circuit cards in the associated power cabinet with spare cards. All circuit card connector pins which are part of the card frame and card edge were reformed to tighten the electrical connections. Additionally, electrical termination inspections, and card seating and alignment checks were performed and verified satisfactory.

The condition had no impact on public health and safety.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Seabrook Station	05000- 443	2020	001	00

NARRATIVE**Description of the Event**

On May 29, 2020, with the plant operating in Mode 1, control room operators initiated a manual reactor trip due to more than one control rod fully inserting into the core unexpectedly. All systems responded normally after the trip. Operations stabilized the plant in Mode 3. Decay heat removal was accomplished via the steam dumps {EIS: JI}. Emergency feedwater {EIS: BA} actuated due to low-low steam generator {EIS: AB} level as expected.

Subsequently, on June 06, 2020, with the plant operating in Mode 1, control room operators initiated a manual reactor trip due to more than one control rod fully inserting into the core unexpectedly. All systems responded normally after the trip.

Event Time Line:

(05/29/2020)

1403: Control rod bank "B", group 1 dropped. Operations entered Dropped Rod Abnormal Operating Procedure (AOP).

1404: Manual reactor trip initiated. Entered E-0, Reactor Trip or Safety Injection.

1406: Transitioned from E-0 to ES-0.1, Reactor Trip Response.

1430: Troubleshooting begins.

1432: Transitioned from ES-0.1 to OS1080.11, Post Trip to Hot Standby.

(06/01/2020) Plant Enters Mode 1

(06/06/2020)

0916: Control rod bank "B", group 1 dropped.

0920: Operations entered OS1210.05, Dropped Rod.

0921: Manual reactor trip initiated. Entered E-0, Reactor Trip or Safety Injection.

0921: Transitioned from E-0 to ES-0.1, Reactor Trip Response.

0940: Transitioned from ES-0.1 to OS1080.11, Post Trip to Hot Standby.

1500: Troubleshooting was reestablished.

(06/11/2020) Plant Enters Mode 1

Cause

The root cause of these events was determined to be an unrealized failure mechanism within the rod control system power cabinets resulting in a failure mode of an intermittent card connection. Card connectors that had pin gaps at the upper end of the manufacturer's tolerance band were not known to be a credible failure mode for the rod control system power cabinet. The cards did not visually reveal any pin anomalies.

The contributing causes of these events were related to an insufficient review of similar industry operating experience for the first event, and a shortfall in the use of the stations condition assessment and response process for the second event.



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Seabrook Station	05000-	YEAR 2020	SEQUENTIAL NUMBER 001	REV NO. 00

NARRATIVE

Analysis of the Event / Safety Consequences

The function of the Rod Control System is to provide reactor power modulation by manual or automatic control of full length control rod banks in a preselected sequence and for manual operation of individual banks. During these events there was no loss in function of safety systems, structures, or components. There were no significant equipment abnormalities. The condition did not result in a safety system functional failure and had no adverse impact on the on the health and safety of the public.

Corrective Actions

Corrective actions taken after the first event: 1) The associated stationary gripper regulation card within the 1BD power cabinet was determined to be the most likely cause of the event. A new stationary gripper regulation card was installed and was functionally checked satisfactorily.

Corrective actions taken after the second event: 1) Replaced the suspect phase multiplexing error detector card, phase control card, firing card and regulation card within the 1BD power cabinet with spare cards that were tested on site by the card manufacturer. 2) Card frame back plane connector and card edge connector pin dimensions for the suspect card locations were measured. All pins associated with the card frame and card edge connectors were reformed to tighten the electrical connections. 3) All other associated card frame and card edge connectors were reformed. 4) Electrical termination point connections within the power control cabinet were inspected. 5) Card re-seating and alignment was verified. 6) Revising the Rod Control Maintenance Plan Preventive Maintenance to include card backplane connector pin reformatting. 7) Revising the Single Point Vulnerability (SPV) analysis for the rod control system to include backplane and circuit card edge connectors. 8) Reviewing and revising associated Single Point Vulnerability mitigation strategies for the main feedwater system as well as the solid state protection system to ensure the extent of cause implications from these events are addressed.

Similar Events

There have not been any similar events experienced at Seabrook.

Additional Information

The Energy Industry Identification System (EIIIS) codes are included in this LER in the following format: [BA - Emergency Feedwater System, AB - Reactor Coolant System, JI - Turbine Steam Bypass System].

This event is being reported under 10 CFR 50.73(a)(2)(iv)(A) as a safety system actuation of the Reactor Protection System.